eurofins | Spectrum Analytical

☐ Final Report
☑ Revised Report

Report Date:
10-Jan-18 17:16

Laboratory Report
SC40225

Gulf Oil L.P.
281 Eastern Avenue
Chelsea, MA 02150
Attn: Andrew P. Adams

Project: Gulf Terminal - Chelsea, MA
Project #: Gulf Chelsea

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2972/2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00348
USDA # P330-15-00375
Vermont # VT-11393

Authorized by:

Dawn Wojcik
Laboratory Director

Dawn E Wojcik

Eurofins Spectrum Analytical holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 27 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC40225

Project: Gulf Terminal - Chelsea, MA

Project Number: Gulf Chelsea

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC40225-01	Chelsea Creek	Surface Water	11-Oct-17 08:45	11-Oct-17 15:45
SC40230-01	Outfall 003	Surface Water	11-Oct-17 09:00	11-Oct-17 15:45

CASE NARRATIVE:

Data has been reported to the MDL. This report includes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the detection limit are reported as "<" (less than) the detection limit in this report.

The samples were received 4.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

Please note that this report contains 30 pages of analytical data from New England Biossay, A Division of GZA.

Noember 10, 2017 Report Revision Case Narrative:

This report has been revised to update the analyte list for 8270 Phenols (on SC40230 Outfall 0003 sample) per client request.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

E350.1

BZ19754-MS

This parameter is outside laboratory ms/msd specified recovery limits.

Ammonia as Nitrogen

EPA 200.8

Samples:

SC40225-01 *Chelsea Creek*

Sample required a dilution due to low internal standard recovery of the lesser diluted digestion, reporting limit is elevated.

Cadmium
Copper
Lead
Nickel
Zinc

SW846 8260C

Calibration:

1710006

Analyte quantified by quadratic equation type calibration.

Naphthalene

SW846 8260C

Calibration:

1710006

This affected the following samples:

1717339-BLK1
1717339-BS1
1717339-BSD1
Chelsea Creek
Outfall 003
S708779-ICV1
S709010-CCV1

Samples:

S709010-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Methyl tert-butyl ether (29.4%)

This affected the following samples:

1717339-BLK1
1717339-BS1
1717339-BSD1
Outfall 003

SW846 8270D

Samples:

SC40230-01RE1 *Outfall 003*

Duplicate analysis confirmed surrogate failure due to matrix effects.

2-Fluorophenol
Phenol-d5

SW846 8270D SIM

Calibration:

1709035

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene

This affected the following samples:

1717566-BLK2
1717566-BS2
1717566-BSD2
Chelsea Creek
S708328-ICV1
S709250-CCV1
S709296-CCV1

Samples:

S709250-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Acenaphthene (23.9%)

SW846 8270D SIM

Samples:

S709250-CCV1

This affected the following samples:

1717566-BLK2
1717566-BS2
1717566-BSD2

SC40230-01RE1 *Outfall 003*

Sample was originally analyzed within the recommended method holding time; however, QC materials for the sample run were out of control. As a result, the sample was immediately re-analyzed (outside the holding time).

SW9222D-06

Samples:

SC40230-01 *Outfall 003*

Sample was received past hold time for Fecal Coliforms (SW9222D).

Fecal Coliforms

Sample Acceptance Check Form

Client:	Gulf Oil L.P.
Project:	Gulf Terminal - Chelsea, MA / Gulf Chelsea
Work Order:	SC40225
Sample(s) received on:	10/11/2017

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples cooled on ice upon transfer to laboratory representative?	☐	☑	☐
Were samples refrigerated upon transfer to laboratory representative?	☐	☑	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Sample Acceptance Check Form

Client:	Gulf Oil L.P.
Project:	Gulf Terminal - Chelsea, MA / Gulf Chelsea
Work Order:	SC40230
Sample(s) received on:	10/11/2017

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples cooled on ice upon transfer to laboratory representative?	☐	☑	☐
Were samples refrigerated upon transfer to laboratory representative?	☐	☑	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC40225-01 **Client ID:** Chelsea Creek

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	0.17		0.05	mg/L	E350.1
Copper	110	DL-15	10	µg/L	EPA 200.8
Salinity	26.1		1.00	ppt (1000)	SM 2520 (01)
Total Solids	47800		500	mg/l	SM2540 B (11)
Total Suspended Solids	15.0		1.7	mg/l	SM2540D (11)
Total Organic Carbon	2.37		1.00	mg/l	SM5310B (00, 11)

Lab ID: SC40230-01 **Client ID:** Outfall 003

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	0.23		0.05	mg/L	E350.1
Chromium	1.6	J	10	µg/L	EPA 200.8
Copper	5.4		1.0	µg/L	EPA 200.8
Lead	4.0		0.50	µg/L	EPA 200.8
Nickel	1.8	J	5.0	µg/L	EPA 200.8
Zinc	10	J	20	µg/L	EPA 200.8
Total Solids	120		5.00	mg/l	SM2540 B (11)
Total Suspended Solids	7.4		0.5	mg/l	SM2540D (11)
Total Residual Chlorine	0.043		0.020	mg/l	SM4500-Cl-G (11)
Total Organic Carbon	4.64		1.00	mg/l	SM5310B (00, 11)
Fecal Coliforms	850	Q1	10	/100 mls	SW9222D-06

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Chelsea Creek	Gulf Chelsea	Surface Water	11-Oct-17 08:45	11-Oct-17
SC40225-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Aromatics by SW846 8260 Prepared by method SW846 5030 Water MS													
71-43-2	Benzene	< 1.0		µg/l	1.0	0.3	1	SW846 8260C	12-Oct-17	13-Oct-17	GMA	1717339	
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*99*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*120*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*107*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
SVOCs by SIM Prepared by method SW846 3510C													
83-32-9	Acenaphthene	< 0.046		µg/l	0.046	0.007	1	SW846 8270D SIM	17-Oct-17	19-Oct-17	MSL	1717566	
208-96-8	Acenaphthylene	< 0.046		µg/l	0.046	0.012	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.046		µg/l	0.046	0.007	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.046		µg/l	0.046	0.016	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.046		µg/l	0.046	0.019	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.046		µg/l	0.046	0.019	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	< 0.046		µg/l	0.046	0.018	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.046		µg/l	0.046	0.017	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.046		µg/l	0.046	0.004	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.046		µg/l	0.046	0.017	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.046		µg/l	0.046	0.004	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.046		µg/l	0.046	0.011	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.046		µg/l	0.046	0.020	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.046		µg/l	0.046	0.020	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.046		µg/l	0.046	0.008	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.046		µg/l	0.046	0.006	1	"	"	"	"	"	
Surrogate recoveries:													
205440-82-0	*Benzo (e) pyrene-d12*	*30*			*30-130 %*			"	"	"	"	"	
General Chemistry Parameters													
7782-50-5	Total Residual Chlorine	< 0.020	CIHT	mg/l	0.020	0.006	1	SM4500-Cl-G (11)	14-Oct-17 10:09	14-Oct-17 17:26	RLT	1717498	X
	pH	**7.64**	pH	pH Units			1	ASTM D 1293-99B	11-Oct-17 14:30	19-Oct-17 13:34	TN	1717324	X
	Salinity	**26.1**		ppt (1000)	1.00	0.144	1	SM 2520 (01)	18-Oct-17	18-Oct-17	BD	1717670	
	Total Solids	**47,800**	LIV	mg/l	500	153	1	SM2540 B (11)	17-Oct-17	18-Oct-17	CMB	1717579	
	Total Suspended Solids	**15.0**		mg/l	1.7	0.7	1	SM2540D (11)	17-Oct-17	18-Oct-17	CMB	1717578	X
	Total Organic Carbon	**2.37**		mg/l	1.00	0.238	1	SM5310B (00, 11)	19-Oct-17	19-Oct-17	RLT	1717748	X

Metals Analyses (Total)

Analysis performed by Con-Test Analytical Laboratory - MJH

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Chelsea Creek SC40225-01	Gulf Chelsea	Surface Water	11-Oct-17 08:45	11-Oct-17

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Metals Analyses (Total)													
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-43-9	Cadmium	< 2.0	DL-15	µg/L	2.0	0.95	10	EPA 200.8	17-Oct-17 12:05	18-Oct-17 12:26	MJH	B188766	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-50-8	Copper	**110**	DL-15	µg/L	10	3.6	10	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - WSD													
7439-92-1	Lead	< 25	DL-15	µg/L	25	6.9	50	"	"	18-Oct-17 14:06	"	"	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-02-0	Nickel	< 50	DL-15	µg/L	50	3.7	10	"	"	18-Oct-17 12:26	"	"	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-66-6	Zinc	< 200	DL-15	µg/L	200	49	10	"	"	"	"	"	
Subcontracted Analyses													
Prepared by method 405439													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**0.17**		mg/L	0.05	0.05	1	E350.1	11-Oct-17 08:45	13-Oct-17 10:40	M-CT007	405439A	
Subcontracted analyses													
Prepared by method NA													
Analysis performed by GZA Geoenvironmental, Inc. - Manchester, CT -*													
	Aquatic Toxicity	**See report**		N/A			1	EPA 821-R-02-12	"	12-Oct-17		'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Outfall 003	Gulf Chelsea	Surface Water	11-Oct-17 09:00	11-Oct-17
SC40230-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260 Prepared by method SW846 5030 Water MS													
71-43-2	Benzene	< 1.00		µg/l	1.00	0.28	1	SW846 8260C	12-Oct-17	13-Oct-17	GMA	1717339	
100-41-4	Ethylbenzene	< 1.00		µg/l	1.00	0.33	1	"	"	"	"	"	
1634-04-4	Methyl tert-butyl ether	< 1.00		µg/l	1.00	0.24	1	"	"	"	"	"	
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.35	1	"	"	"	"	"	
108-88-3	Toluene	< 1.00		µg/l	1.00	0.30	1	"	"	"	"	"	
75-01-4	Vinyl chloride	< 1.00		µg/l	1.00	0.47	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	< 2.00		µg/l	2.00	0.38	1	"	"	"	"	"	
95-47-6	o-Xylene	< 1.00		µg/l	1.00	0.28	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0	5.90	1	"	"	"	"	"	
64-17-5	Ethanol	< 200		µg/l	200	30.9	1	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*99*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*111*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*104*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Re-analysis of Acid Extractables/Phenols Prepared by method SW846 3510C													
108-95-2	Phenol	< 0.620	U	µg/l	4.81	0.620	1	SW846 8270D	17-Oct-17	24-Oct-17	MSL	1717901	
Surrogate recoveries:													
367-12-4	*2-Fluorophenol*	*13*	SDUP		*15-110 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*10*	SDUP		*15-110 %*			"	"	"	"	"	
Re-analysis of SVOCs by SIM			HT5										
83-32-9	Acenaphthene	< 0.048		µg/l	0.048	0.007	1	SW846 8270D SIM	23-Oct-17	24-Oct-17	MSL	"	
208-96-8	Acenaphthylene	< 0.048		µg/l	0.048	0.013	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.048		µg/l	0.048	0.007	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.048		µg/l	0.048	0.017	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.048		µg/l	0.048	0.019	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.048		µg/l	0.048	0.020	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	< 0.048		µg/l	0.048	0.018	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.048		µg/l	0.048	0.018	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.048		µg/l	0.048	0.005	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.048		µg/l	0.048	0.018	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.048		µg/l	0.048	0.004	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.048		µg/l	0.048	0.012	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.048		µg/l	0.048	0.021	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.048		µg/l	0.048	0.021	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.048		µg/l	0.048	0.008	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.048		µg/l	0.048	0.006	1	"	"	"	"	"	
Surrogate recoveries:													
205440-82-0	*Benzo (e) pyrene-d12*	*31*			*30-130 %*			"	"	"	"	"	
General Chemistry Parameters													
7782-50-5	Total Residual Chlorine	**0.043**	ClHT	mg/l	0.020	0.006	1	SM4500-Cl-G (11)	14-Oct-17 10:09	14-Oct-17 17:28	RLT	1717498	X

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Outfall 003 SC40230-01	Gulf Chelsea	Surface Water	11-Oct-17 09:00	11-Oct-17

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
General Chemistry Parameters													
	pH	**7.95**	pH	pH Units			1	ASTM D 1293-99B	11-Oct-17 14:30	19-Oct-17 13:34	TN	1717324	X
	Salinity	< 1.00		ppt (1000)	1.00	0.144	1	SM 2520 (01)	18-Oct-17	18-Oct-17	BD	1717670	
	Total Solids	**120**		mg/l	5.00	1.53	1	SM2540 B (11)	17-Oct-17	18-Oct-17	CMB	1717579	
	Total Suspended Solids	**7.4**		mg/l	0.5	0.2	1	SM2540D (11)	17-Oct-17	18-Oct-17	CMB	1717578	X
	Total Organic Carbon	**4.64**		mg/l	1.00	0.238	1	SM5310B (00, 11)	19-Oct-17	19-Oct-17	RLT	1717748	X
Metals Analyses (Total)													
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-43-9	Cadmium	< 0.095		µg/L	0.20	0.095	1	EPA 200.8	17-Oct-17 12:05	18-Oct-17 11:42	MJH	B188766	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-50-8	Copper	**5.4**		µg/L	1.0	0.36	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7439-92-1	Lead	**4.0**		µg/L	0.50	0.14	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-02-0	Nickel	**1.8**	J	µg/L	5.0	0.37	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-66-6	Zinc	**10**	J	µg/L	20	4.9	1	"	"	"	"	"	
Subcontracted Analyses													
Prepared by method 405439													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**0.23**		mg/L	0.05	0.05	1	E350.1	11-Oct-17 09:00	13-Oct-17 10:39	M-CT007	405439A	
Subcontracted Analyses													
Prepared by method 405870													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Oil and Grease by EPA 1664A	< 1.5		mg/L	1.5	1.5	1.1	E1664A	"	17-Oct-17 07:40	M-CT007	405870A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Fecal Coliforms	**850**	Q1	/100 mls	10	10	10	SW9222D-06	"	12-Oct-17 13:55	M-CT007	'[none]'	
Metals Analyses (Total)													
Analysis performed by Con-Test Analytical Laboratory - MJH													
7440-47-3	Chromium	**1.6**	J	µg/L	10	0.51	1	EPA 200.8	17-Oct-17 12:05	18-Oct-17 11:42	MJH	B188766	
Subcontracted analyses													
Prepared by method NA													
Analysis performed by GZA Geoenvironmental, Inc. - Manchester, CT -*													
	Aquatic Toxicity	**See report**		N/A			1	EPA-821-R-02-012	11-Oct-17 09:00	12-Oct-17		'[none]'	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 1717339 - SW846 5030 Water MS										
Blank (1717339-BLK1)					Prepared & Analyzed: 12-Oct-17					
Benzene	< 1.0		µg/l	1.0						
Benzene	< 1.00		µg/l	1.00						
Ethylbenzene	< 1.0		µg/l	1.0						
Ethylbenzene	< 1.00		µg/l	1.00						
Methyl tert-butyl ether	< 1.00		µg/l	1.00						
Naphthalene	< 1.0		µg/l	1.0						
Naphthalene	< 1.00		µg/l	1.00						
Toluene	< 1.00		µg/l	1.00						
Toluene	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.0		µg/l	2.0						
Vinyl chloride	< 1.00		µg/l	1.00						
o-Xylene	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.00		µg/l	2.00						
o-Xylene	< 1.00		µg/l	1.00						
Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0						
Ethanol	< 200		µg/l	200						
Surrogate: 4-Bromofluorobenzene	*49.5*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*49.5*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: Toluene-d8	*50.0*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*50.0*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.0*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.0*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: Dibromofluoromethane	*52.4*		µg/l		*50.0*		*105*	*70-130*		
Surrogate: Dibromofluoromethane	*52.4*		µg/l		*50.0*		*105*	*70-130*		
LCS (1717339-BS1)					Prepared & Analyzed: 12-Oct-17					
Benzene	**22.5**		µg/l		20.0		112	70-130		
Benzene	**22.5**		µg/l		20.0		112	70-130		
Ethylbenzene	**22.6**		µg/l		20.0		113	70-130		
Ethylbenzene	**22.6**		µg/l		20.0		113	70-130		
Methyl tert-butyl ether	**25.9**		µg/l		20.0		129	70-130		
Naphthalene	**21.3**		µg/l		20.0		107	70-130		
Naphthalene	**21.3**		µg/l		20.0		107	70-130		
Toluene	**22.1**		µg/l		20.0		111	70-130		
Toluene	**22.1**		µg/l		20.0		111	70-130		
m,p-Xylene	**22.2**		µg/l		20.0		111	70-130		
Vinyl chloride	**23.8**		µg/l		20.0		119	70-130		
o-Xylene	**23.3**		µg/l		20.0		117	70-130		
m,p-Xylene	**22.2**		µg/l		20.0		111	70-130		
o-Xylene	**23.3**		µg/l		20.0		117	70-130		
Tert-Butanol / butyl alcohol	**234**		µg/l		200		117	70-130		
Ethanol	**424**		µg/l		400		106	70-130		
Surrogate: 4-Bromofluorobenzene	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Toluene-d8	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Toluene-d8	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.0*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.0*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: Dibromofluoromethane	*51.6*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: Dibromofluoromethane	*51.6*		µg/l		*50.0*		*103*	*70-130*		
LCS Dup (1717339-BSD1)					Prepared & Analyzed: 12-Oct-17					

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 1717339 - SW846 5030 Water MS										
LCS Dup (1717339-BSD1)					Prepared & Analyzed: 12-Oct-17					
Benzene	**20.7**		µg/l		20.0		103	70-130	8	20
Benzene	**20.7**		µg/l		20.0		103	70-130	8	20
Ethylbenzene	**21.0**		µg/l		20.0		105	70-130	7	20
Ethylbenzene	**21.0**		µg/l		20.0		105	70-130	7	20
Methyl tert-butyl ether	**24.0**		µg/l		20.0		120	70-130	7	20
Naphthalene	**19.1**		µg/l		20.0		96	70-130	11	20
Naphthalene	**19.1**		µg/l		20.0		96	70-130	11	20
Toluene	**20.2**		µg/l		20.0		101	70-130	9	20
Toluene	**20.2**		µg/l		20.0		101	70-130	9	20
Vinyl chloride	**23.2**		µg/l		20.0		116	70-130	2	20
m,p-Xylene	**20.2**		µg/l		20.0		101	70-130	9	20
m,p-Xylene	**20.2**		µg/l		20.0		101	70-130	9	20
o-Xylene	**21.6**		µg/l		20.0		108	70-130	8	20
o-Xylene	**21.6**		µg/l		20.0		108	70-130	8	20
Tert-Butanol / butyl alcohol	**236**		µg/l		200		118	70-130	1	20
Ethanol	**436**		µg/l		400		109	70-130	3	20
Surrogate: 4-Bromofluorobenzene	*50.2*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.2*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*49.3*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: Toluene-d8	*49.3*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.2*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*55.2*		µg/l		*50.0*		*110*	*70-130*		
Surrogate: Dibromofluoromethane	*51.2*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: Dibromofluoromethane	*51.2*		µg/l		*50.0*		*102*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 1717566 - SW846 3510C										
Blank (1717566-BLK1)					Prepared: 17-Oct-17 Analyzed: 19-Oct-17					
4-Chloro-3-methylphenol	< 0.506	U	µg/l	0.506						
2-Chlorophenol	< 0.756	U	µg/l	0.756						
2,4-Dichlorophenol	< 0.535	U	µg/l	0.535						
2,4-Dimethylphenol	< 0.660	U	µg/l	0.660						
4,6-Dinitro-2-methylphenol	< 0.322	U	µg/l	0.322						
2,4-Dinitrophenol	< 0.567	U	µg/l	0.567						
2-Methylphenol	< 0.672	U	µg/l	0.672						
3 & 4-Methylphenol	< 0.621	U	µg/l	0.621						
2-Nitrophenol	< 0.470	U	µg/l	0.470						
4-Nitrophenol	< 0.846	U	µg/l	0.846						
Pentachlorophenol	< 0.377	U	µg/l	0.377						
Phenol	< 0.652	U	µg/l	0.652						
2,4,5-Trichlorophenol	< 0.525	U	µg/l	0.525						
2,4,6-Trichlorophenol	< 0.523	U	µg/l	0.523						
Surrogate: 2-Fluorophenol	*29.1*		µg/l		*50.5*		*58*	*15-110*		
Surrogate: Phenol-d5	*23.7*		µg/l		*50.5*		*47*	*15-110*		
LCS (1717566-BS1)					Prepared: 17-Oct-17 Analyzed: 19-Oct-17					
4-Chloro-3-methylphenol	**27.6**		µg/l	0.506	50.5		55	30-130		
2-Chlorophenol	**26.3**		µg/l	0.756	50.5		52	30-130		
2,4-Dichlorophenol	**28.1**		µg/l	0.535	50.5		56	30-130		
2,4-Dimethylphenol	**28.9**		µg/l	0.660	50.5		57	30-130		
4,6-Dinitro-2-methylphenol	**24.1**		µg/l	0.322	50.5		48	30-130		
2,4-Dinitrophenol	**21.2**		µg/l	0.567	50.5		42	30-130		
2-Methylphenol	**27.1**		µg/l	0.672	50.5		54	30-130		
3 & 4-Methylphenol	**26.6**		µg/l	0.621	50.5		53	30-130		
2-Nitrophenol	**30.7**		µg/l	0.470	50.5		61	30-130		
4-Nitrophenol	**24.8**		µg/l	0.846	50.5		49	30-130		
Pentachlorophenol	**30.5**		µg/l	0.377	50.5		60	30-130		
Phenol	**18.4**		µg/l	0.652	50.5		36	30-130		
2,4,5-Trichlorophenol	**30.1**		µg/l	0.525	50.5		60	30-130		
2,4,6-Trichlorophenol	**31.5**		µg/l	0.523	50.5		62	30-130		
Surrogate: 2-Fluorophenol	*19.6*		µg/l		*50.5*		*39*	*15-110*		
Surrogate: Phenol-d5	*16.5*		µg/l		*50.5*		*33*	*15-110*		
LCS Dup (1717566-BSD1)					Prepared: 17-Oct-17 Analyzed: 19-Oct-17					
4-Chloro-3-methylphenol	**29.2**		µg/l	0.506	50.5		58	30-130	6	20
2-Chlorophenol	**25.4**		µg/l	0.756	50.5		50	30-130	3	20
2,4-Dichlorophenol	**27.6**		µg/l	0.535	50.5		55	30-130	2	20
2,4-Dimethylphenol	**25.2**		µg/l	0.660	50.5		50	30-130	14	20
4,6-Dinitro-2-methylphenol	**28.0**		µg/l	0.322	50.5		55	30-130	15	20
2,4-Dinitrophenol	**20.7**		µg/l	0.567	50.5		41	30-130	2	20
2-Methylphenol	**24.6**		µg/l	0.672	50.5		49	30-130	9	20
3 & 4-Methylphenol	**24.7**		µg/l	0.621	50.5		49	30-130	7	20
2-Nitrophenol	**27.8**		µg/l	0.470	50.5		55	30-130	10	20
4-Nitrophenol	**22.8**		µg/l	0.846	50.5		45	30-130	8	20
Pentachlorophenol	**28.7**		µg/l	0.377	50.5		57	30-130	6	20
Phenol	**17.4**		µg/l	0.652	50.5		34	30-130	5	20
2,4,5-Trichlorophenol	**30.5**		µg/l	0.525	50.5		60	30-130	2	20
2,4,6-Trichlorophenol	**28.5**		µg/l	0.523	50.5		56	30-130	10	20
Surrogate: 2-Fluorophenol	*18.6*		µg/l		*50.5*		*37*	*15-110*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 1717566 - SW846 3510C										
LCS Dup (1717566-BSD1)						Prepared: 17-Oct-17 Analyzed: 19-Oct-17				
Surrogate: Phenol-d5	*15.8*		µg/l		*50.5*		*31*	*15-110*		
Batch 1717901 - SW846 3510C										
Blank (1717901-BLK1)						Prepared: 23-Oct-17 Analyzed: 24-Oct-17				
4-Chloro-3-methylphenol	< 0.506	U	µg/l	0.506						
2-Chlorophenol	< 0.756	U	µg/l	0.756						
2,4-Dichlorophenol	< 0.535	U	µg/l	0.535						
2,4-Dimethylphenol	< 0.660	U	µg/l	0.660						
4,6-Dinitro-2-methylphenol	< 0.322	U	µg/l	0.322						
2,4-Dinitrophenol	< 0.567	U	µg/l	0.567						
2-Methylphenol	< 0.672	U	µg/l	0.672						
3 & 4-Methylphenol	< 0.621	U	µg/l	0.621						
2-Nitrophenol	< 0.470	U	µg/l	0.470						
4-Nitrophenol	< 0.846	U	µg/l	0.846						
Pentachlorophenol	< 0.377	U	µg/l	0.377						
Phenol	< 0.652	U	µg/l	0.652						
2,4,5-Trichlorophenol	< 0.525	U	µg/l	0.525						
2,4,6-Trichlorophenol	< 0.523	U	µg/l	0.523						
Surrogate: 2-Fluorophenol	*19.7*		µg/l		*50.5*		*39*	*15-110*		
Surrogate: Phenol-d5	*17.5*		µg/l		*50.5*		*35*	*15-110*		
LCS (1717901-BS1)						Prepared: 23-Oct-17 Analyzed: 24-Oct-17				
4-Chloro-3-methylphenol	**34.6**		µg/l	0.491	49.0		71	30-130		
2-Chlorophenol	**30.6**		µg/l	0.733	49.0		62	30-130		
2,4-Dichlorophenol	**33.5**		µg/l	0.520	49.0		68	30-130		
2,4-Dimethylphenol	**29.1**		µg/l	0.640	49.0		59	30-130		
4,6-Dinitro-2-methylphenol	**36.7**		µg/l	0.313	49.0		75	30-130		
2,4-Dinitrophenol	**33.6**		µg/l	0.550	49.0		69	30-130		
2-Methylphenol	**31.0**		µg/l	0.652	49.0		63	30-130		
3 & 4-Methylphenol	**30.7**		µg/l	0.603	49.0		63	30-130		
2-Nitrophenol	**34.2**		µg/l	0.456	49.0		70	30-130		
4-Nitrophenol	**34.0**		µg/l	0.822	49.0		69	30-130		
Pentachlorophenol	**32.7**		µg/l	0.366	49.0		67	30-130		
Phenol	**25.9**		µg/l	0.632	49.0		53	30-130		
2,4,5-Trichlorophenol	**34.5**		µg/l	0.510	49.0		70	30-130		
2,4,6-Trichlorophenol	**33.9**		µg/l	0.508	49.0		69	30-130		
Surrogate: 2-Fluorophenol	*37.5*		µg/l		*49.0*		*76*	*15-110*		
Surrogate: Phenol-d5	*35.4*		µg/l		*49.0*		*72*	*15-110*		
LCS Dup (1717901-BSD1)						Prepared: 23-Oct-17 Analyzed: 24-Oct-17				
4-Chloro-3-methylphenol	**33.9**		µg/l	0.501	50.0		68	30-130	2	20
2-Chlorophenol	**30.4**		µg/l	0.748	50.0		61	30-130	0.6	20
2,4-Dichlorophenol	**31.9**		µg/l	0.530	50.0		64	30-130	5	20
2,4-Dimethylphenol	**28.3**		µg/l	0.653	50.0		57	30-130	3	20
4,6-Dinitro-2-methylphenol	**38.8**		µg/l	0.319	50.0		78	30-130	5	20
2,4-Dinitrophenol	**33.0**		µg/l	0.561	50.0		66	30-130	2	20
2-Methylphenol	**29.0**		µg/l	0.665	50.0		58	30-130	7	20
3 & 4-Methylphenol	**29.6**		µg/l	0.615	50.0		59	30-130	3	20
2-Nitrophenol	**33.7**		µg/l	0.465	50.0		67	30-130	1	20
4-Nitrophenol	**32.7**		µg/l	0.838	50.0		65	30-130	4	20
Pentachlorophenol	**34.3**		µg/l	0.373	50.0		69	30-130	5	20
Phenol	**25.8**		µg/l	0.645	50.0		52	30-130	0.5	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 1717901 - SW846 3510C										
LCS Dup (1717901-BSD1)					Prepared: 23-Oct-17 Analyzed: 24-Oct-17					
2,4,5-Trichlorophenol	**35.1**		µg/l	0.520	50.0		70	30-130	2	20
2,4,6-Trichlorophenol	**32.7**		µg/l	0.518	50.0		65	30-130	3	20
Surrogate: 2-Fluorophenol	*36.5*		µg/l		*50.0*		*73*	*15-110*		
Surrogate: Phenol-d5	*34.8*		µg/l		*50.0*		*70*	*15-110*		
SW846 8270D SIM										
Batch 1717566 - SW846 3510C										
Blank (1717566-BLK2)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Acenaphthene	< 0.051		µg/l	0.051						
Acenaphthylene	< 0.051		µg/l	0.051						
Anthracene	< 0.051		µg/l	0.051						
Benzo (a) anthracene	< 0.051		µg/l	0.051						
Benzo (a) pyrene	< 0.051		µg/l	0.051						
Benzo (b) fluoranthene	< 0.051		µg/l	0.051						
Benzo (g,h,i) perylene	< 0.051		µg/l	0.051						
Benzo (k) fluoranthene	< 0.051		µg/l	0.051						
Chrysene	< 0.051		µg/l	0.051						
Dibenzo (a,h) anthracene	< 0.051		µg/l	0.051						
Fluoranthene	< 0.051		µg/l	0.051						
Fluorene	< 0.051		µg/l	0.051						
Indeno (1,2,3-cd) pyrene	< 0.051		µg/l	0.051						
Naphthalene	< 0.051		µg/l	0.051						
Phenanthrene	< 0.051		µg/l	0.051						
Pyrene	< 0.051		µg/l	0.051						
Surrogate: Benzo (e) pyrene-d12	*0.869*		µg/l		*1.01*		*86*	*30-130*		
LCS (1717566-BS2)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Acenaphthene	**0.918**		µg/l	0.051	1.02		90	40-140		
Acenaphthylene	**0.828**		µg/l	0.051	1.02		81	40-140		
Anthracene	**0.767**		µg/l	0.051	1.02		75	40-140		
Benzo (a) anthracene	**0.921**		µg/l	0.051	1.02		90	40-140		
Benzo (a) pyrene	**0.961**		µg/l	0.051	1.02		94	40-140		
Benzo (b) fluoranthene	**0.931**		µg/l	0.051	1.02		91	40-140		
Benzo (g,h,i) perylene	**0.753**		µg/l	0.051	1.02		74	40-140		
Benzo (k) fluoranthene	**0.821**		µg/l	0.051	1.02		81	40-140		
Chrysene	**0.913**		µg/l	0.051	1.02		90	40-140		
Dibenzo (a,h) anthracene	**0.849**		µg/l	0.051	1.02		83	40-140		
Fluoranthene	**0.833**		µg/l	0.051	1.02		82	40-140		
Fluorene	**0.816**		µg/l	0.051	1.02		80	40-140		
Indeno (1,2,3-cd) pyrene	**0.782**		µg/l	0.051	1.02		77	40-140		
Naphthalene	**0.759**		µg/l	0.051	1.02		74	40-140		
Phenanthrene	**1.01**		µg/l	0.051	1.02		99	40-140		
Pyrene	**0.902**		µg/l	0.051	1.02		88	40-140		
Surrogate: Benzo (e) pyrene-d12	*0.714*		µg/l		*1.02*		*70*	*30-130*		
LCS Dup (1717566-BSD2)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Acenaphthene	**0.836**		µg/l	0.051	1.01		83	40-140	9	20
Acenaphthylene	**0.693**		µg/l	0.051	1.01		69	40-140	18	20
Anthracene	**0.813**		µg/l	0.051	1.01		80	40-140	6	20
Benzo (a) anthracene	**0.948**		µg/l	0.051	1.01		94	40-140	3	20
Benzo (a) pyrene	**0.995**		µg/l	0.051	1.01		99	40-140	3	20
Benzo (b) fluoranthene	**0.942**		µg/l	0.051	1.01		93	40-140	1	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D SIM										
Batch 1717566 - SW846 3510C										
LCS Dup (1717566-BSD2)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Benzo (g,h,i) perylene	**0.785**		µg/l	0.051	1.01		78	40-140	4	20
Benzo (k) fluoranthene	**0.866**		µg/l	0.051	1.01		86	40-140	5	20
Chrysene	**0.905**		µg/l	0.051	1.01		90	40-140	0.9	20
Dibenzo (a,h) anthracene	**0.892**		µg/l	0.051	1.01		88	40-140	5	20
Fluoranthene	**0.861**		µg/l	0.051	1.01		85	40-140	3	20
Fluorene	**0.775**		µg/l	0.051	1.01		77	40-140	5	20
Indeno (1,2,3-cd) pyrene	**0.841**		µg/l	0.051	1.01		83	40-140	7	20
Naphthalene	**0.722**		µg/l	0.051	1.01		72	40-140	5	20
Phenanthrene	**1.09**		µg/l	0.051	1.01		108	40-140	8	20
Pyrene	**0.909**		µg/l	0.051	1.01		90	40-140	0.8	20
Surrogate: Benzo (e) pyrene-d12	*0.848*		µg/l		*1.01*		*84*	*30-130*		
Batch 1717901 - SW846 3510C										
Blank (1717901-BLK2)					Prepared: 23-Oct-17 Analyzed: 24-Oct-17					
Acenaphthene	< 0.051		µg/l	0.051						
Acenaphthylene	< 0.051		µg/l	0.051						
Anthracene	< 0.051		µg/l	0.051						
Benzo (a) anthracene	< 0.051		µg/l	0.051						
Benzo (a) pyrene	< 0.051		µg/l	0.051						
Benzo (b) fluoranthene	< 0.051		µg/l	0.051						
Benzo (g,h,i) perylene	< 0.051		µg/l	0.051						
Benzo (k) fluoranthene	< 0.051		µg/l	0.051						
Chrysene	< 0.051		µg/l	0.051						
Dibenzo (a,h) anthracene	< 0.051		µg/l	0.051						
Fluoranthene	< 0.051		µg/l	0.051						
Fluorene	< 0.051		µg/l	0.051						
Indeno (1,2,3-cd) pyrene	< 0.051		µg/l	0.051						
Naphthalene	< 0.051		µg/l	0.051						
Phenanthrene	< 0.051		µg/l	0.051						
Pyrene	< 0.051		µg/l	0.051						
Surrogate: Benzo (e) pyrene-d12	*0.879*		µg/l		*1.01*		*87*	*30-130*		
LCS (1717901-BS2)					Prepared: 23-Oct-17 Analyzed: 24-Oct-17					
Acenaphthene	**0.585**		µg/l	0.051	1.01		58	40-140		
Acenaphthylene	**0.620**		µg/l	0.051	1.01		61	40-140		
Anthracene	**0.639**		µg/l	0.051	1.01		63	40-140		
Benzo (a) anthracene	**0.686**		µg/l	0.051	1.01		68	40-140		
Benzo (a) pyrene	**0.791**		µg/l	0.051	1.01		78	40-140		
Benzo (b) fluoranthene	**0.621**		µg/l	0.051	1.01		62	40-140		
Benzo (g,h,i) perylene	**0.614**		µg/l	0.051	1.01		61	40-140		
Benzo (k) fluoranthene	**0.649**		µg/l	0.051	1.01		64	40-140		
Chrysene	**0.662**		µg/l	0.051	1.01		66	40-140		
Dibenzo (a,h) anthracene	**0.638**		µg/l	0.051	1.01		63	40-140		
Fluoranthene	**0.638**		µg/l	0.051	1.01		63	40-140		
Fluorene	**0.640**		µg/l	0.051	1.01		63	40-140		
Indeno (1,2,3-cd) pyrene	**0.688**		µg/l	0.051	1.01		68	40-140		
Naphthalene	**0.549**		µg/l	0.051	1.01		54	40-140		
Phenanthrene	**0.714**		µg/l	0.051	1.01		71	40-140		
Pyrene	**0.682**		µg/l	0.051	1.01		68	40-140		
Surrogate: Benzo (e) pyrene-d12	*0.636*		µg/l		*1.01*		*63*	*30-130*		
LCS Dup (1717901-BSD2)					Prepared: 23-Oct-17 Analyzed: 24-Oct-17					

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D SIM										
Batch 1717901 - SW846 3510C										
LCS Dup (1717901-BSD2)					Prepared: 23-Oct-17 Analyzed: 24-Oct-17					
Acenaphthene	**0.581**		µg/l	0.050	1.00		58	40-140	0.7	20
Acenaphthylene	**0.626**		µg/l	0.050	1.00		63	40-140	0.9	20
Anthracene	**0.599**		µg/l	0.050	1.00		60	40-140	7	20
Benzo (a) anthracene	**0.730**		µg/l	0.050	1.00		73	40-140	6	20
Benzo (a) pyrene	**0.782**		µg/l	0.050	1.00		78	40-140	1	20
Benzo (b) fluoranthene	**0.652**		µg/l	0.050	1.00		65	40-140	5	20
Benzo (g,h,i) perylene	**0.607**		µg/l	0.050	1.00		61	40-140	1	20
Benzo (k) fluoranthene	**0.672**		µg/l	0.050	1.00		67	40-140	3	20
Chrysene	**0.609**		µg/l	0.050	1.00		61	40-140	8	20
Dibenzo (a,h) anthracene	**0.677**		µg/l	0.050	1.00		68	40-140	6	20
Fluoranthene	**0.670**		µg/l	0.050	1.00		67	40-140	5	20
Fluorene	**0.684**		µg/l	0.050	1.00		68	40-140	7	20
Indeno (1,2,3-cd) pyrene	**0.667**		µg/l	0.050	1.00		67	40-140	3	20
Naphthalene	**0.572**		µg/l	0.050	1.00		57	40-140	4	20
Phenanthrene	**0.768**		µg/l	0.050	1.00		77	40-140	7	20
Pyrene	**0.707**		µg/l	0.050	1.00		71	40-140	4	20
Surrogate: Benzo (e) pyrene-d12	*0.600*		µg/l		*1.00*		*60*	*30-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ASTM D 1293-99B										
Batch 1717324 - General Preparation										
Duplicate (1717324-DUP1)			**Source: SC40230-01**			Prepared: 11-Oct-17 Analyzed: 19-Oct-17				
pH	**7.94**		pH Units			7.95			0.1	5
Reference (1717324-SRM1)						Prepared: 11-Oct-17 Analyzed: 19-Oct-17				
pH	**5.99**		pH Units		6.00		100	97.5-102.5		
Reference (1717324-SRM2)						Prepared: 11-Oct-17 Analyzed: 19-Oct-17				
pH	**6.00**		pH Units		6.00		100	97.5-102.5		
SM 2520 (01)										
Batch 1717670 - General Preparation										
Duplicate (1717670-DUP1)			**Source: SC40225-01**			Prepared & Analyzed: 18-Oct-17				
Salinity	**26.1**		ppt (1000)	1.00		26.1			0	10
Reference (1717670-SRM1)						Prepared & Analyzed: 18-Oct-17				
Salinity	**10.1**		ppt (1000)	1.00	10.0		101	90-110		
Reference (1717670-SRM2)						Prepared & Analyzed: 18-Oct-17				
Salinity	**10.1**		ppt (1000)	1.00	10.0		101	90-110		
SM2540 B (11)										
Batch 1717579 - General Preparation										
Blank (1717579-BLK1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Total Solids	< 5.00		mg/l	5.00						
LCS (1717579-BS1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Total Solids	**1120**		mg/l	10.0	1100		102	90-110		
SM2540D (11)										
Batch 1717578 - General Preparation										
Blank (1717578-BLK1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Total Suspended Solids	< 0.5		mg/l	0.5						
LCS (1717578-BS1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Total Suspended Solids	**106**		mg/l	10.0	100		106	90-110		
SM4500-Cl-G (11)										
Batch 1717498 - General Preparation										
Blank (1717498-BLK1)						Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	< 0.020		mg/l	0.020						
LCS (1717498-BS1)						Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	**0.050**		mg/l	0.020	0.0500		100	90-110		
Duplicate (1717498-DUP1)			**Source: SC40225-01**			Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	**0.017**	J	mg/l	0.020		0.019			12	20
Matrix Spike (1717498-MS1)			**Source: SC40225-01**			Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	**0.062**		mg/l	0.020	0.0500	0.019	85	80-120		
Matrix Spike Dup (1717498-MSD1)			**Source: SC40225-01**			Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	**0.060**		mg/l	0.020	0.0500	0.019	83	80-120	2	200
Reference (1717498-SRM1)						Prepared & Analyzed: 14-Oct-17				
Total Residual Chlorine	**0.124**		mg/l	0.020	0.131		95	85-115		
SM5310B (00, 11)										
Batch 1717748 - General Preparation										
Blank (1717748-BLK1)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	< 1.00		mg/l	1.00						
LCS (1717748-BS1)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**14.0**		mg/l	1.00	15.0		94	85-115		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SM5310B (00, 11)										
Batch 1717748 - General Preparation										
Calibration Blank (1717748-CCB1)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**0.125**		mg/l							
Calibration Blank (1717748-CCB2)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**0.216**		mg/l							
Calibration Blank (1717748-CCB3)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**0.128**		mg/l							
Calibration Check (1717748-CCV1)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**14.2**		mg/l	1.00	15.0		95	85-115		
Calibration Check (1717748-CCV2)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**14.4**		mg/l	1.00	15.0		96	85-115		
Calibration Check (1717748-CCV3)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**14.2**		mg/l	1.00	15.0		94	85-115		
Reference (1717748-SRM1)						Prepared & Analyzed: 19-Oct-17				
Total Organic Carbon	**15.8**		mg/l	1.00	14.6		109	88-112		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.8										
Batch B188766 - EPA 200.8										
Blank (B188766-BLK1)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Zinc	< 20		µg/L	20				-		
Cadmium	< 0.20		µg/L	0.20				-		
Lead	< 0.50		µg/L	0.50				-		
Nickel	< 5.0		µg/L	5.0				-		
Copper	< 1.0		µg/L	1.0				-		
LCS (B188766-BS1)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Cadmium	**514**		µg/L	2.0	500		103	85-115		
Copper	**1040**		µg/L	10	1000		104	85-115		
Lead	**528**		µg/L	5.0	500		106	85-115		
Nickel	**524**		µg/L	50	500		105	85-115		
Zinc	**1040**		µg/L	200	1000		104	85-115		
LCS Dup (B188766-BSD1)					Prepared: 17-Oct-17 Analyzed: 18-Oct-17					
Cadmium	**503**		µg/L	2.0	500		101	85-115	2.09	20
Zinc	**1010**		µg/L	200	1000		101	85-115	3.02	20
Nickel	**504**		µg/L	50	500		101	85-115	3.84	20
Lead	**518**		µg/L	5.0	500		104	85-115	1.87	20
Copper	**1010**		µg/L	10	1000		101	85-115	3.23	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
E350.1										
Batch 405439A - 405439										
BLK (BZ19754-BLK)						Prepared & Analyzed: 13-Oct-17				
Ammonia as Nitrogen	< 0.05		mg/L	0.05				-		
DUP (BZ19754-DUP)			**Source: BZ19754**			Prepared & Analyzed: 13-Oct-17				
Ammonia as Nitrogen	**0.27**		mg/L	0.05				-	3.6	20
LCS (BZ19754-LCS)						Prepared & Analyzed: 13-Oct-17				
Ammonia as Nitrogen	**3.610**		mg/L	0.05	3.74		96.5	90-110		20
MS (BZ19754-MS)			**Source: BZ19754**			Prepared & Analyzed: 13-Oct-17				
Ammonia as Nitrogen	**2.050**	m	mg/L	0.05	2		88.4	90-110		20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
E1664A										
Batch 405870A - 405870										
BLK (BZ19769-BLK)						Prepared & Analyzed: 17-Oct-17				
Oil and Grease by EPA 1664A	< 1.4		mg/L	1.4	40			-		
LCS (BZ19769-LCS)						Prepared: Analyzed: 17-Oct-17				
Oil and Grease by EPA 1664A	**39.60**		mg/L	1.4	40		99	85-115		20
LCSD (BZ19769-LCSD)						Prepared: Analyzed: 17-Oct-17				
Oil and Grease by EPA 1664A	**39.30**		%	1.4	40		98	85-115	1.0	20

Metals Analyses (Total) - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.8										
Batch B188766 - EPA 200.8										
Blank (B188766-BLK1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Chromium	**0.74**	J	µg/L	0.51				-		
LCS (B188766-BS1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Chromium	**529**		µg/L	5.1	500		106	85-115		
LCS Dup (B188766-BSD1)						Prepared: 17-Oct-17 Analyzed: 18-Oct-17				
Chromium	**510**		µg/L	5.1	500		102	85-115	3.78	20

Notes and Definitions

DL-15	Sample required a dilution due to low internal standard recovery of the lesser diluted digestion, reporting limit is elevated.
HT5	Sample was originally analyzed within the recommended method holding time; however, QC materials for the sample run were out of control. As a result, the sample was immediately re-analyzed (outside the holding time).
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
m	This parameter is outside laboratory ms/msd specified recovery limits.
Q1	Sample was received past hold time for Fecal Coliforms (SW9222D).
SDUP	Duplicate analysis confirmed surrogate failure due to matrix effects.
U	Analyte included in the analysis, but not detected at or above the MDL.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
ClHT	The method for residual chlorine indicates that samples should be analyzed immediately. 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous residual chlorine samples not analyzed in the field are considered out of hold time at the time of sample receipt.
OG	The required Matrix Spike and Matrix Spike Duplicate (MS/MSD) for Oil & Grease method 1664B can only be analyzed when the client has submitted sufficient sample volume. An extra liter per MS/MSD is required to fulfill the method QC criteria. Please refer to Chain of Custody and QC Summary (MS/MSD) of the Laboratory Report to verify ample sample volume was submitted to fulfill the requirement.
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.
LIV	The initial volume for this sample has been reduced due to sample matrix and/or historical data therefore elevating the reporting limit.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

New England Bioassay
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

77 Batson Drive
Manchester, CT 06042
T: 860.643.9560
F: 860.646.7169
www.nebio.com

ACUTE AQUATIC TOXICITY TEST REPORT

Gulf Oil Terminal
Chelsea, MA

Test Start Date: 10/12/17

Test Period: October 2017

Report Prepared by:

New England Bioassay
A Division of GZA GeoEnvironmental, Inc.
77 Batson Dr.
Manchester, CT 06042

NEB Project Number: 05.0045469.00

Report Date: November 7, 2017

Report Submitted to:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001

Sample ID: SC40230-01/SC40225-01

Whole Effluent Toxicity Testing Report Instruction Form

Client Name/Project: Spectrum / Gulf Oil Terminal Test Date: 10/12/17

Sample ID: SC40230-01/SC40225-01

Your results were as follows:

☒ Monitoring Only

□ Fail – Please proceed according to the instructions in your permit.

□ Invalid – **Retesting is still required. Retest report will be sent at a later date under separate cover.**

□ Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**

□ Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

□ This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

□ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the NEB Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.

Please complete the items on this list before reporting these results according to the instructions in the "Monitoring and Reporting" Section of your permit.

- Please complete, sign and date the upper portion of the "Whole Effluent Toxicity Test Report Certification" page which is the page directly following this page.
- Fill in the Sample Type and Sample Method (upper right) and the Permit Limits (lower left) on the New England Bioassay - EPA Toxicity Test Summary Sheet(s) if they are incomplete.
- Fill in any missing information on the NEB Chain-of-Custody documents. This includes ensuring that the following information is recorded: Sampler's name and title, Facility name and address, Sample collection methods, Sample collection start and end dates and times, Types of sample, Chlorination status of samples upon shipment to NEB, Site description and Sample collection procedures.
- Monitoring results should be summarized on your monthly Discharge Monitoring Report Form.
- Signed and dated originals of this report must be submitted to the State (and Federal) Agencies specified in the "Monitoring and Reporting" section of your permit.

Questions? Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____ _____
[Date] [Authorized Signature]

_____
[Print or Type Name and Title]

_____
[Print or Type the Permittee's Name]

_____
[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on 11/7/17 _____
[Date] [Authorized Signature]

Kim Wills, Laboratory Manager
[Print or Type Name and Title]

New England Bioassay
[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts
If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Gulf Oil Terminal Test Start Date: 10/12/17
NPDES Permit Number: MA0001091 Outfall Number: 003

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	X Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	_ Composite
_ Modified	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
(Chronic reporting	X Mysid Shrimp	_ Chlorinated	_ Other
LC50 values)	_ Sheepshead		
_ 24-Hour Screening	_ Menidia		
	_ Sea Urchin	TRC conc. 0.067 mg/L	
	_ Selenastrum		
	_Other_____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge;
(Receiving water name and sampling location: Chelsea River)

_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name:_____)

_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ Artificial sea salts mixed with deionized water;

_ Other_____

Effluent Sampling Date(s): 10/11/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): monitoring only

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt

Reference Toxicant test date: 10/2/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms 5 days (< 24 hours) Source of Organisms NEB

TEST RESULTS &PERMIT LIMITS
Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 97.5% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

B. Receiving Water Control
Mean Control Survival: 97.5% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

C. Lab Culture Control Yes_ No X

D. Thiosulfate Control Yes_ No X

Test Variability

Test PMSD (growth) N/A
Test PMSD (reproduction.) N/A

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

PMSD Comparison Discussion – N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

X 1. Ideal concentration-response relationship
_ 2. All or nothing response
_ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
_ 4. Stimulation at low concentrations but no significant effect at higher concentrations
_ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
_ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
_ 7. Significant effects only at highest concentration
_ 8. Significant effects at all test concentrations but flat concentration-response curve
_ 9. Significant effects at all test concentrations with a sloped concentration-response curve
_ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

X 1. Results are reliable and should be reported.
_ 2. Results are anomalous. An explanation is provided in the body of the report.
_ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Gulf Oil Terminal Test Start Date: 10/12/17
NPDES Permit Number: MA0001091 Outfall Number: 003

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	X Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	_ Composite
_ Modified	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
(Chronic reporting	_ Mysid Shrimp	_ Chlorinated	_ Other
LC50 values)	_ Sheepshead		
_ 24-Hour Screening	X Menidia		
	_ Sea Urchin	TRC conc. 0.067 mg/L	
	_ Selenastrum		
	_Other		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge;
(Receiving water name and sampling location: Chelsea River)
_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name:)
_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
_ Artificial sea salts mixed with deionized water;
_ Other

Effluent Sampling Date(s): 10/11/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): monitoring only

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt

Reference Toxicant test date: 9/6/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms 11 days (<24 hours) Source of Organisms AI

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

C. Lab Culture Control Yes_ No X

D. Thiosulfate Control Yes_ No X

Test Variability

Test PMSD (growth) N/A
Test PMSD (reproduction.) N/A

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

PMSD Comparison Discussion – N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

X 1. Ideal concentration-response relationship
_ 2. All or nothing response
_ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
_ 4. Stimulation at low concentrations but no significant effect at higher concentrations
_ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
_ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
_ 7. Significant effects only at highest concentration
_ 8. Significant effects at all test concentrations but flat concentration-response curve
_ 9. Significant effects at all test concentrations with a sloped concentration-response curve
_ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

X 1. Results are reliable and should be reported.
_ 2. Results are anomalous. An explanation is provided in the body of the report.
_ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

MYSIDOPSIS BAHIA AQUATIC TOXICITY TEST REPORT

Test Reference Manual:	EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms and Marine Organisms", Fifth Edition
Test Method:	*Mysidopsis bahia* Acute Toxicity Test – Method 2007.0
Test Type:	Acute Static Non-Renewal Saltwater Test
Salinity:	25 ppt ± 10% for all dilutions by dry ocean salts (Instant Ocean)
Temperature :	25 ± 1°C
Light Quality:	Ambient Laboratory Illumination
Photoperiod:	16 hours light, 8 hours dark
Test Chamber Size:	250 mL
Test Solution Volume:	Minimum 200 mL
Age of Test Organisms:	5 days
Number of Mysids Per Test Chamber:	10
Number of Replicate Test Chambers Per Treatment:	4
Total Number of Mysids Per Test Concentration:	40
Feeding Regime:	Light feeding using concentrated *Artemia* nauplii while holding prior to initiating the test.
Aeration:	Aerated at <100 bubbles/minute
Dilution Water:	Chelsea River
Alternate Control Water:	NEB Artificial Salt Water (salinity 25 ppt)
Effluent Concentrations:	0%, 6.25%, 12.5%, 25%, 50% and 100% effluent
Test Duration:	48 hours
Effect measured:	Mortality – no movement of body appendages on gentle prodding.
Test Acceptability:	≥ 90% survival of test organisms in control solution Yes X No _
Sampling Requirements:	Samples first used within 36 hours of collection Yes X No _
Sample Volume Required:	Minimum 2 liters
Test Organism Source:	New England Bioassay
Test Acceptability Criteria:	Mean Alternate Water Control Survival = 97.5% Mean Dilution Water Control Survival = 97.5%

Test Results:

	Limits	Results
48-hour LC50	N/A	>100%
Upper Value		±∞
Lower Value		100%
Data Analysis Method Used		Graphical
A-NOEC		100%

Reference Toxicant Data:

Date:	10/2/17
Toxicant:	Sodium Dodecyl Sulfate
Dilution Water:	NEB Artificial Salt Water
Toxicant Source:	New England Bioassay
Organism Source:	New England Bioassay
48-hour LC50:	18.9 mg/L
In Acceptable Range:	Yes X No _____

Dechlorination Procedures: Chlorine is measured using 4500 CL-G DPD Colorimetric Method.

X Dechlorination was not required.

_ Sample was dechlorinated by adding sodium thiosulfate to the sample prior to test initiation. Since dechlorination of the effluent was necessary, a thiosulfate control of diluent water spiked with sodium thiosulfate was also included in the test series. Chlorine was _____ mg/L in a dechlorinated sample.

_ Chlorine Measurement was elevated due to interference. Chlorine was _____ mg/L in a filtered sample.

_ Total Residual Chlorine was re-measured following aeration, and was found to be _____ mg/L.

Additional Notes or Other Conditions Affecting the Test:

MENIDIA BERYLLINA AQUATIC TOXICITY TEST REPORT

Test Reference Manual:	EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms and Marine Organisms", Fifth Edition
Test Method:	*Menidia beryllina* Acute Toxicity Test – Method 2006.0
Test Type:	Acute Static Non-Renewal Saltwater Test
Salinity:	25 ppt ± 2 ppt by adding dry ocean salts (Instant Ocean)
Temperature :	25 ± 1°C
Light Quality:	Ambient Laboratory Illumination
Photoperiod:	16 hours light, 8 hours dark
Test Chamber Size:	250 mL
Test Solution Volume:	Minimum 200 mL/replicate
Age of Test Organisms:	11 days old (24 hour age range)
Number of Fish Per Test Chamber:	10
Number of Replicate Test Chambers Per Treatment:	4
Total Number of Organisms Per Test Concentration:	40
Feeding Regime:	Light feeding using concentrated *Artemia* nauplii while holding prior to initiating the test.
Aeration:	Aerated at <100 bubbles/minute
Dilution Water:	Chelsea River
Alternate Control Water:	NEB Artificial Salt Water (salinity 25 ppt)
Effluent Concentrations:	0%, 6.25%, 12.5%, 25%, 50% and 100% effluent
Test Duration:	48 hours
Effect measured:	Mortality – no movement on gentle prodding.
Test Acceptability:	≥ 90% survival of test organisms in control solution Yes X No _
Sampling Requirements:	Samples first used within 36 hours of collection Yes X No _
Sample Volume Required:	Minimum 2 liters
Test Organism Source:	Aquatic Indicators
Test Acceptability Criteria:	Mean Alternate Water Control Survival = 100% Mean Dilution Water Control Survival = 100%

Test Results:

	Limits	Results
48-hour LC50	N/A	>100%
Upper Value		±∞
Lower Value		100%
Data Analysis Method Used		Graphical
A-NOEC		100%

Reference Toxicant Data:

Date:	9/6/17
Toxicant:	Sodium Dodecyl Sulfate
Dilution Water:	NEB Artificial Salt Water
Toxicant Source:	New England Bioassay
Organism Source:	Aquatic Indicators
48-hour LC50:	8.7 mg/L
In Acceptable Range:	Yes X No _____

Dechlorination Procedures: Chlorine is measured using 4500 CL-G DPD Colorimetric Method.

X Dechlorination was not required.

_ Sample was dechlorinated by adding sodium thiosulfate to the sample prior to test initiation. Since dechlorination of the effluent was necessary, a thiosulfate control of diluent water spiked with sodium thiosulfate was also included in the test series. Chlorine was _____ mg/L in a dechlorinated sample.

_ Chlorine Measurement was elevated due to interference. Chlorine was _____ mg/L in a filtered sample.

_ Total Residual Chlorine was re-measured following aeration, and was found to be _____ mg/L.

Additional Notes or Other Conditions Affecting the Test:

NEW ENGLAND BIOASSAY ACUTE TOXICITY DATA FORM
COVER SHEET FOR LC50 TESTS

CLIENT:	Eurofins Spectrum Analytical	*M.bahia* TEST ID #	17-1590a
ADDRESS:	11 Almgren Drive	*M.beryllina* TEST ID #	17-1590b
	Agawam, MA 01001	COC #	C37-38762/73
SAMPLE TYPE:	Gulf Oil Terminal Outfall 003	PROJECT #	05.0045469.00
DILUTION WATER:	Chelsea River		

Sample Date(s): 10/11/17 Received On: 10/12/17

INVERTEBRATES

TEST SET UP (TECH INIT)	CB
TEST SPECIES	*Mysidopsis bahia*
NEB LOT#	Mb17 (10-7)
AGE	5 days
TEST SOLUTION VOLUME (mls)	200
NO. ORGANISMS PER TEST CHAMBER	10
NO. ORGANISMS PER CONCENTRATION	40
NO. ORGANISMS PER CONTROL	40

	DATE	TIME
TEST START:	10/12/17	1549
TEST END:	10/14/17	1549

VERTEBRATES

TEST SET UP (TECH INIT)	CB
TEST SPECIES	*Menidia beryllina*
NEB LOT#	Ss17 AI (10-10)
AGE	11 days
TEST SOLUTION VOLUME (mls)	700
NO. ORGANISMS PER TEST CHAMBER	10
NO. ORGANISMS PER CONCENTRATION	40
NO. ORGANISMS PER CONTROL	40

	DATE	TIME
TEST START:	10/12/17	1512
TEST END:	10/14/17	1555

LABORATORY CONTROL WATER:

		Salinity (ppt)	Alkalinity (mg/L $CaCO_3$)
ARTIFICIAL SW: NEB BATCH#	CRIO37-039	25	125

RESULTS OF *Mysidopsis bahia* LC50 TEST

METHOD	LC50 (%)	95% Confidence Limits
BINOMIAL/GRAPHICAL	>100%	100%±∞
PROBIT		
SPEARMAN KARBER		
NOAEL	100%	

RESULTS OF *Menidia beryllina* LC50 TEST

METHOD	LC50 (%)	95% Confidence Limits
BINOMIAL/GRAPHICAL	>100%	100%±∞
PROBIT		
SPEARMAN KARBER		
NOAEL	100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATION

Comments: Added 287.5g of IO to 10L of effluent to bring salinity to 25ppt; mixed 16L of river with 2L of DI water to make a 25ppt diluent. CB 10/12/17

REVIEWD BY: DATE: 11/7/17

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1590a
Project #: 05.0045469.00
Facility Name: Gulf Oil Terminal
Date Sampled: 10/11/17
Date Received: 10/12/17
Sample ID: Outfall 003

Test Organism: *Mysidopsis bahia*
Organism Age: 5 days
Test Duration: 48 (hours)
Beginning Date: 10/12/17 Time: 1549
Dilution Water Source: Chelsea River
Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.3	6.5	6.9	24.8	24.6	24.4	8.0	8.0	7.9	25	25	28
Control B	10	10	10		6.0	5.7		25.1	25.1		8.0	7.9		25	26
Control C	10	10	10		5.8	5.3		25.2	25.2		8.0	7.8		25	26
Control D	10	10	9		5.6	5.1		25.2	25.1		8.0	7.8		25	26
Diluent A	10	10	10	7.3	5.6	5.2	24.9	25.2	25.1	7.8	7.8	7.7	25	25	26
Diluent B	10	10	10		5.6	5.0		25.3	25.1		7.8	7.6		25	26
Diluent C	10	9	9		5.7	4.6		25.1	25.2		7.8	7.6		25	26
Diluent D	10	10	10		6.0	4.6		25.1	25.1		7.8	7.6		25	26
6.25 A	10	10	10	7.3	6.1	5.1	24.8	24.9	25.1	7.8	7.8	7.6	25	25	27
6.25 B	10	10	10		6.1	4.6		25.0	25.1		7.8	7.6		25	26
6.25 C	10	10	10		5.8	4.2		25.2	25.2		7.8	7.5		25	26
6.25 D	10	10	10		5.9	3.8		24.9	25.2		7.8	7.5		25	26
12.5 A	10	10	10	7.3	5.9	4.0	24.8	25.0	25.2	7.8	7.8	7.6	25	25	26
12.5 B	10	10	10		6.0	4.1		24.8	25.2		7.9	7.6		25	27
12.5 C	10	10	10		5.7	4.2		25.1	25.1		7.8	7.6		25	26
12.5 D	10	10	10		6.0	4.0		24.6	25.1		7.9	7.6		25	27
25 A	10	10	10	7.3	5.9	5.3	24.8	25.0	25.4	7.8	7.9	7.6	26	26	26
25 B	10	10	10		5.7	4.1		25.2	25.4		7.8	7.6		26	26
25 C	10	9	9		5.8	3.9		24.8	25.4		7.9	7.6		26	27
25 D	10	10	10		5.9	4.0		24.8	25.2		7.9	7.6		26	26

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1590a
Project #: 05.0045469.00
Facility Name: Gulf Oil Terminal
Date Sampled: 10/11/17
Date Received: 10/12/17
Sample ID: Outfall 003

Test Organism: *Mysidopsis bahia*
Organism Age: 5 days
Test Duration: 48 (hours)
Beginning Date: 10/12/17 Time: 1549
Dilution Water Source: Chelsea River
Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	9	9	7.3	5.7	4.1	24.7	25.2	25.4	7.9	7.9	7.7	26	26	27
50 B	10	9	9		5.4	3.9		25.2	24.5		7.9	7.7		26	27
50 C	10	10	10		5.5	3.9		25.2	25.3		7.9	7.7		26	27
50 D	10	10	10		5.5	3.8		25.0	25.3		7.9	7.7		26	26
100 A	10	10	10	7.4	6.0	4.2	24.5	25.0	25.3	7.9	8.1	7.9	27	27	28
100 B	10	10	10		5.9	4.8		25.2	25.3		8.0	8.0		27	28
100 C	10	10	10		5.6	5.3		25.1	25.2		8.0	7.9		27	28
100 D	10	9	9		5.7	4.8		24.8	25.3		8.0	7.9		27	28

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	17-4492-0876	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:21	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	19-4244-6459	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	12 Oct-17 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Oct-17 15:49	**Species:**	Mysidopsis bahia	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	5d
Sample ID:	20-9766-6475	**Code:**	7D07D9AB	**Client:**	Spectrum Analytical
Sample Date:	11 Oct-17 09:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	12 Oct-17	**Source:**	Gulf Oil Terminal (MA0001091)		
Sample Age:	31h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	7.43%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	20	10	1	6	Asymp	0.9516	Non-Significant Effect
		12.5	20	10	1	6	Asymp	0.9516	Non-Significant Effect
		25	18	10	2	6	Asymp	0.8333	Non-Significant Effect
		50	16	10	2	6	Asymp	0.6105	Non-Significant Effect
		100	18	10	2	6	Asymp	0.8333	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0188129	0.0037626	5	0.7846	0.5740	Non-Significant Effect
Error	0.0863178	0.0047954	18			
Total	0.105131		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	5.933	4.248	0.0021	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1.133	4.248	0.3786	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8239	0.884	7.4E-04	Non-Normal Distribution

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-2.56%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-2.56%
25		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
50		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	2.56%
100		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%
6.25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	-2.97%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	-2.97%
25		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%
50		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	2.97%
100		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%

Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	17-4492-0876	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:21	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	0.9000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	0.9000	1.0000
50		0.9000	0.9000	1.0000	1.0000
100		1.0000	1.0000	1.0000	0.9000

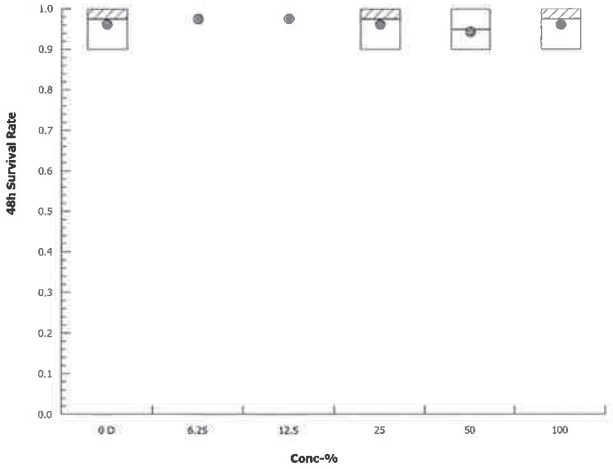
Angular (Corrected) Transformed Detail

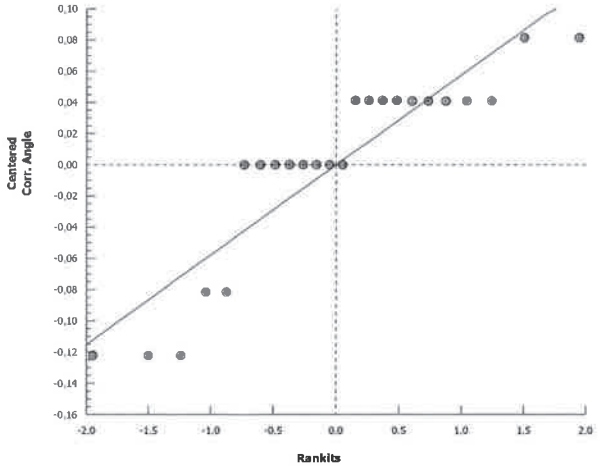
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.249	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.412	1.412	1.412	1.412
25		1.412	1.412	1.249	1.412
50		1.249	1.249	1.412	1.412
100		1.412	1.412	1.412	1.249

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	9/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	9/10	10/10
50		9/10	9/10	10/10	10/10
100		10/10	10/10	10/10	9/10

Graphics





Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	06-6342-3782	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:21	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	19-4244-6459	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	12 Oct-17 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Oct-17 15:49	**Species:**	Mysidopsis bahia	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	5d
Sample ID:	20-9766-6475	**Code:**	7D07D9AB	**Client:**	Spectrum Analytical
Sample Date:	11 Oct-17 09:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	12 Oct-17	**Source:**	Gulf Oil Terminal (MA0001091)		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	407468	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

48h Survival Rate Summary — Calculated Variate(A/B)

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	0.0%	39	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%	40	40
25		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	0.0%	39	40
50		4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	2.56%	38	40
100		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	0.0%	39	40

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	0.9000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	0.9000	1.0000
50		0.9000	0.9000	1.0000	1.0000
100		1.0000	1.0000	1.0000	0.9000

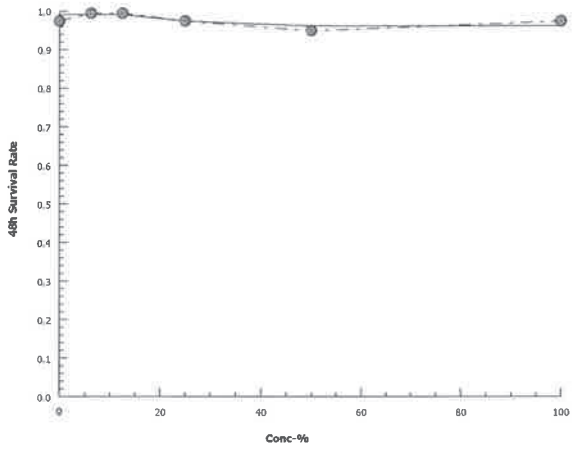
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	9/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	9/10	10/10
50		9/10	9/10	10/10	10/10
100		10/10	10/10	10/10	9/10

Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	06-6342-3782	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:21	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1590b
Project #: 05.0045469.00
Facility Name: Gulf Oil Terminal
Date Sampled: 10/11/17
Date Received: 10/12/17
Sample ID: Outfall 003

Test Organism: *Menidia beryllina*
Organism Age: 11 days
Test Duration: 48 (hours)
Beginning Date: 10/12/17 Time: 1512
Dilution Water Source: Chelsea River
Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.3	6.1	6.3	24.8	24.6	24.6	8.0	8.0	7.8	25	25	26
Control B	10	10	10		5.8	5.8		25.0	24.7		8.0	7.8		25	26
Control C	10	10	10		5.8	5.6		24.9	24.8		8.0	7.9		25	26
Control D	10	10	10		6.0	5.6		24.8	24.6		8.0	7.0		25	26
Diluent A	10	10	10	7.3	6.1	6.1	24.9	24.6	24.4	7.8	7.9	7.7	25	25	26
Diluent B	10	10	10		5.8	5.7		24.9	24.9		7.8	7.7		25	26
Diluent C	10	10	10		5.7	5.5		24.9	24.9		7.8	7.7		25	26
Diluent D	10	10	10		5.9	5.4		24.9	24.9		7.8	7.7		25	26
6.25 A	10	10	10	7.3	5.8	6.1	24.8	25.0	24.9	7.8	7.8	7.7	25	25	26
6.25 B	10	10	9		5.8	5.7		25.1	24.9		7.8	7.7		25	26
6.25 C	10	10	9		5.6	5.5		25.0	25.1		7.8	7.7		25	26
6.25 D	10	10	10		5.8	5.3		24.9	25.0		7.8	7.7		25	26
12.5 A	10	10	10	7.3	5.6	6.1	24.8	25.1	25.1	7.8	7.8	7.7	25	26	26
12.5 B	10	10	10		5.7	5.6		25.1	25.2		7.8	7.7		26	26
12.5 C	10	10	10		5.7	5.4		25.0	25.2		7.8	7.7		26	26
12.5 D	10	10	10		5.7	5.4		25.0	25.2		7.8	7.8		26	26
25 A	10	10	10	7.3	5.9	6.0	24.8	25.0	25.1	7.8	7.9	7.8	26	26	26
25 B	10	10	10		5.7	5.5		25.0	25.3		7.9	7.8		26	26
25 C	10	10	10		5.8	5.2		25.0	25.2		7.9	7.8		26	26
25 D	10	10	10		5.9	5.3		24.8	25.0		7.9	7.8		26	26

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1590b
Project #: 05.0045469.00
Facility Name: Gulf Oil Terminal
Date Sampled: 10/11/17
Date Received: 10/12/17
Sample ID: Outfall 003

Test Organism: *Menidia beryllina*
Organism Age: 11 days
Test Duration: 48 (hours)
Beginning Date: 10/12/17 Time: 1512
Dilution Water Source: Chelsea River
Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO	CB	PD	KO
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	10	9	7.3	6.0	5.7	24.7	24.7	25.2	7.9	8.0	7.9	26	27	27
50 B	10	10	10		5.9	5.6		24.8	25.1		8.0	7.9		26	27
50 C	10	10	10		5.7	5.4		24.9	25.1		7.9	7.9		26	26
50 D	10	10	10		5.9	5.4		24.6	24.9		8.0	7.9		26	27
100 A	10	10	10	7.4	6.1	5.5	24.5	24.4	24.9	7.9	8.1	8.0	27	28	28
100 B	10	10	10		5.8	5.6		24.7	25.0		8.0	8.0		27	28
100 C	10	10	10		5.9	5.5		24.7	25.1		8.0	8.0		27	28
100 D	10	10	10		5.9	5.4		24.7	24.9		8.0	8.0		27	28

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	02-9233-5194	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:28	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	12-2653-6696	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	12 Oct-17 15:12	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Oct-17 15:55	**Species:**	Menidia beryllina	**Brine:**	
Duration:	49h	**Source:**	Aquatic Indicators, CA	**Age:**	11d
Sample ID:	02-5215-8514	**Code:**	F07A232	**Client:**	Spectrum Analytical
Sample Date:	11 Oct-17 09:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	12 Oct-17	**Source:**	Gulf Oil Terminal (MA0001091)		
Sample Age:	30h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	5.90%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	14	10	1	6	Asymp	0.3451	Non-Significant Effect
		12.5	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		50	16	10	1	6	Asymp	0.6105	Non-Significant Effect
		100	18	10	1	6	Asymp	0.8333	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0232394	0.0046479	5	1.8	0.1637	Non-Significant Effect
Error	0.0464788	0.0025822	18			
Total	0.0697182		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	20.2	4.248	8.2E-07	Unequal Variances
Variances	Mod Levene Equality of Variance Test	4.2	4.248	0.0105	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.7721	0.884	1.1E-04	Non-Normal Distribution

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	5.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	2.50%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	5.77%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
50		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	2.89%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%

Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	02-9233-5194	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:28	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	0.9000	0.9000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

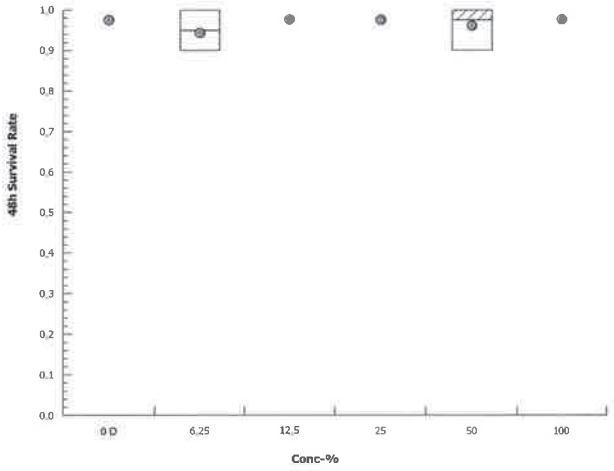
Angular (Corrected) Transformed Detail

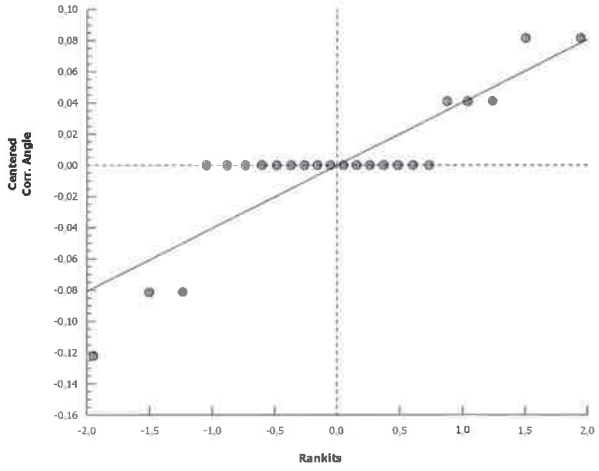
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.249	1.249	1.412
12.5		1.412	1.412	1.412	1.412
25		1.412	1.412	1.412	1.412
50		1.249	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	9/10	9/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		9/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics





Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	14-8316-9267	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:28	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	12-2653-6696	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	12 Oct-17 15:12	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Oct-17 15:55	**Species:**	Menidia beryllina	**Brine:**	
Duration:	49h	**Source:**	Aquatic Indicators, CA	**Age:**	11d
Sample ID:	02-5215-8514	**Code:**	F07A232	**Client:**	Spectrum Analytical
Sample Date:	11 Oct-17 09:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	12 Oct-17	**Source:**	Gulf Oil Terminal (MA0001091)		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	443583	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

48h Survival Rate Summary — Calculated Variate(A/B)

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	5.0%	38	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
50		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	2.5%	39	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	0.9000	0.9000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

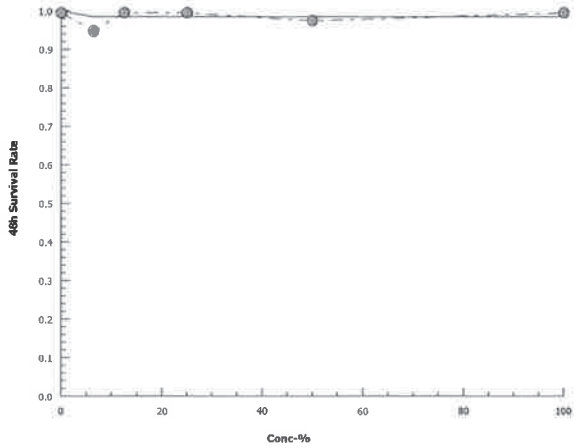
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	9/10	9/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		9/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	14-8316-9267	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	07 Nov-17 8:28	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



INITIAL CHEMISTRY INFORMATION

CLIENT: Gulf Oil Terminal - 003

PROJECT # 05.0045469.00

RECIEPT DATE	TBP	
SAMPLE	Effluent	Receiving Water
COC #	C37-3872	C37-3873
Temperature (°C)	3.9	4.1
Dissolved Oxygen (mg/L)	7.1	7.6
pH (standard units)	6.9	6.9
Conductivity (µmhos/cm)	246	44,200
Salinity (ppt)	<1	28
Hardness (as mg/L CaCO3)	54	5000
Alkalinity (as mg/L CaCO3)	45	100
TRC - DPD (mg/L)	0.067*	0.014
INITIALS	TBP	TBP

Additional notes:

*TRC reading <0.05 mg/L when measured by amperometric titration.

eurofins | Spectrum Analytical

SUBCONTRACT ORDER

SC40230

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001
Phone: (413) 789-9018
Fax: (413) 789-4076
Project Manager: Dulce Litchfield

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT*
77 Batson Drive
Manchester, CT 06042
Phone: (860) 286-8900
Fax: (860) 242-8389

BILL TO:

Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
accountspayable@eurofinsus.com
PO Number: SC40230

Project: Gulf Terminal - Chelsea, MA

Project #: Gulf Chelsea

PO Number: SC40230

Laboratory ID	Sample ID	Sampled	Matrix	Analysis	Due	Comments
	SC40230-01	11-Oct-17 09:00	Surface Water	Aquatic Tox	**26-Oct-17 16:00**	Client ID is Outfall 003/LC50

Containers Supplied:

Other (O)

C37-3872

EFF

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to SpectrumLabResults@EurofinsUS.com.

Please notify SpectrumLabResults@EurofinsUS.com immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received
ON ICE

Released By	Date	Received By	Date	Temp °C
[signature]	10.12.17	[signature]	10/12/17	
Released By	Date	Received By	Date	

eurofins | Spectrum Analytical

SUBCONTRACT ORDER

SC40225

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001
Phone: (413) 789-9018
Fax: (413) 789-4076
Project Manager: Dulce Litchfield

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT*
77 Batson Drive
Manchester, CT 06042
Phone: (860) 286-8900
Fax: (860) 242-8389

BILL TO:

Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
accountspayable@eurofinsus.com
PO Number: SC40225

Project: Gulf Terminal - Chelsea, MA

Project #: Gulf Chelsea

PO Number: SC40225

Laboratory ID	Sample ID	Sampled	Matrix	Analysis	Due	Comments
	SC40225-01	11-Oct-17 08:45	Surface Water	Aquatic Tox	**26-Oct-17 16:00**	Client ID is Chelsea Creek/LC50

Containers Supplied:

Other (I) C37-3873

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to SpectrumLabResults@EurofinsUS.com.

Please notify SpectrumLabResults@EurofinsUS.com immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received
ON ICE

Released By	Date	Received By	Date	Temp °C
[signature]	10-12-17	[signature]	10/12/17	
Released By	Date	Received By	Date	

NEB SALTWATER SPEC 3 ACCLIMATION RECORD

Species:	Client:	Quantity:	*Mortality upon arrival
Menidia beryllina	Test ID:	560	3
Source:	Lot #: SS17AI(10.10)	Age:	* Mortality > 10% - Notify management
Aquatic Indicators		9 days on 10.10.17	

Allowable Mortality: > 5% mortality = Notify management.

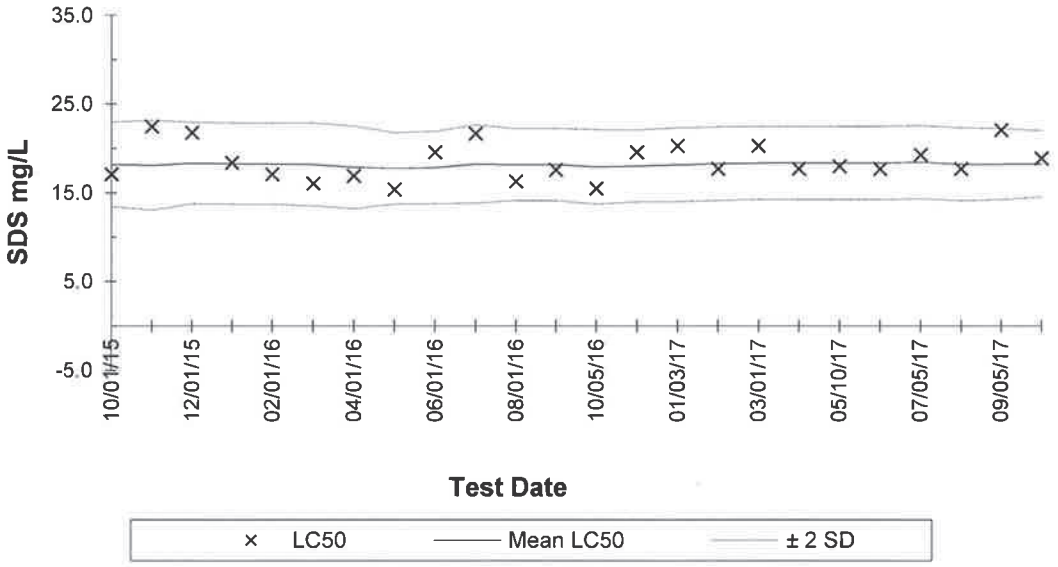
Allowable Acclimation: Fish = No more than 50% tank volume water change over a 12 (twelve) hour period.

Mysids = Need to be +/- 2 ppt of test dilution water.

Water Chemistry						Observations						
Date	D.O. (mg/L)	p.H. (SU)	Temp. (C) *	Alkal. (mg/L) ml titrant	Sal. (ppt) **	Feedings			Behavioral observations	Do organisms look stressed?	Mortalities	Comments / Treatment type
						AM	NOON	PM	A = Normal, B = Erratic mov. C = Dead	Yes / No	# of dead organisms removed from tank	
10.10.17	10.2	7.5	23.5	180 / 3.6 ml	22	AH	MG	KF	A/C	No	10	Acclimated to ASW
10.11.17	7.9	–	21.8	–	27	KF	KF	KF	A/C	No	11	H_2O Δ w/ 10L ASW
10.12.17	6.8	–	21.7	–	27	KF	KF	KF				

New England Bioassay
Reference Toxicant Data: *Mysidopsis bahia* 48-hour LC50

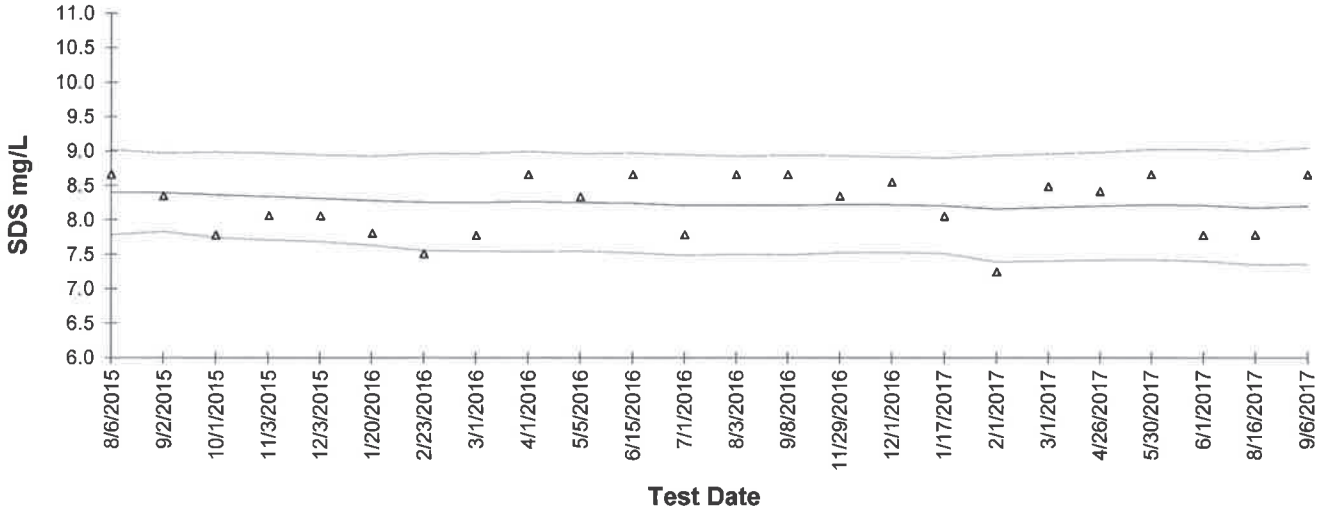
Reference Toxicant: Sodium Dodecyl Sulfate
Test Dates: Oct 2015 - Oct 2017



Test ID	Date	LC_{50}	Mean LC_{50}	STD	-2STD	+2STD	CV	CV National 75th & 90th%
15-1458	10/1/2015	17.1	18.2	2.4	13.5	23.0	0.13	0.26
15-1687	11/2/2015	22.5	18.1	2.5	13.1	23.2	0.13	0.26
15-1776	12/1/2015	21.8	18.4	2.3	13.8	23.0	0.14	0.26
16-34	1/4/2016	18.4	18.3	2.3	13.7	22.9	0.13	0.26
16-142	2/1/2016	17.1	18.3	2.3	13.7	22.8	0.12	0.26
16-338	3/8/2016	16.1	18.2	2.3	13.6	22.9	0.12	0.26
16-460	4/1/2016	16.9	17.9	2.3	13.2	22.5	0.13	0.26
16-600	5/2/2016	15.4	17.8	2.0	13.7	21.8	0.13	0.26
16-709	6/1/2016	19.6	17.9	2.0	13.8	22.0	0.11	0.26
16-849	7/1/2016	21.7	18.3	2.2	13.8	22.7	0.11	0.26
16-1058	8/1/2016	16.3	18.2	2.0	14.1	22.2	0.12	0.26
16-1256	9/7/2016	17.6	18.2	2.0	14.1	22.3	0.11	0.26
16-1471	10/5/2016	15.5	17.9	2.1	13.7	22.1	0.11	0.26
16-1590	11/1/2016	19.6	18.0	2.0	14.0	22.1	0.12	0.26
17-9	1/3/2017	20.3	18.2	2.1	14.0	22.4	0.11	0.26
17-154	2/1/2017	17.7	18.3	2.1	14.1	22.4	0.11	0.26
17-273	3/1/2017	20.3	18.4	2.1	14.3	22.5	0.11	0.26
17-479	4/4/2017	17.7	18.4	2.1	14.2	22.5	0.11	0.26
17-697	5/10/2017	18.0	18.4	2.1	14.2	22.5	0.11	0.26
17-776	6/1/2017	17.7	18.4	2.1	14.2	22.5	0.11	0.26
17-977	7/5/2017	19.3	18.5	2.1	14.3	22.6	0.11	0.26
17-1144	8/1/2017	17.7	18.2	2.0	14.1	22.3	0.11	0.26
17-1329	9/5/2017	22.1	18.3	2.0	14.2	22.3	0.11	0.26
17-1520	10/2/2017	18.9	18.3	1.9	14.6	22.0	0.10	0.26

New England Bioassay
Reference Toxicant Data: *Menidia beryllina* 48-hour LC50

Reference Toxicant: Sodium Dodecyl Sulfate
Test Dates: Aug 2015 - Sept 2017



Test ID	Date	LC_{50}	Mean LC_{50}	STD	-2STD	+2STD	CV	CV National 75th%	CV National 90th%
15-1083	8/6/2015	8.7	8.4	0.3	7.8	9.0	0.04	0.21	0.44
15-1297	9/2/2015	8.4	8.4	0.3	7.8	9.0	0.03	0.21	0.44
15-1539	10/1/2015	7.8	8.4	0.3	7.7	9.0	0.04	0.21	0.44
15-1688	11/3/2015	8.1	8.3	0.3	7.7	9.0	0.04	0.21	0.44
15-1825	12/3/2015	8.1	8.3	0.3	7.7	8.9	0.04	0.21	0.44
16-108	1/20/2016	7.8	8.3	0.3	7.6	8.9	0.04	0.21	0.44
16-260	2/23/2016	7.5	8.3	0.4	7.6	9.0	0.04	0.21	0.44
16-303	3/1/2016	7.8	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-461	4/1/2016	8.7	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-602	5/5/2016	8.3	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-798	6/15/2016	8.7	8.2	0.4	7.5	9.0	0.04	0.21	0.44
16-850	7/1/2016	7.8	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1060	8/3/2016	8.7	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1282	9/8/2016	8.7	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1705	11/29/2016	8.4	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1739	12/1/2016	8.6	8.2	0.3	7.5	8.9	0.04	0.21	0.44
17-83	1/17/2017	8.1	8.2	0.3	7.5	8.9	0.04	0.21	0.44
17-155	2/1/2017	7.3	8.2	0.4	7.4	8.9	0.05	0.21	0.44
17-278	3/1/2017	8.5	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-595	4/26/2017	8.4	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-758	5/30/2017	8.7	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-777	6/1/2017	7.8	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-1246	8/16/2017	7.8	8.2	0.4	7.3	9.0	0.05	0.21	0.44
17-1340	9/6/2017	8.7	8.2	0.4	7.4	9.0	0.05	0.21	0.44

SC40225 By ✓

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic
SC40225-01	Chelsea Creek	10-11-17	0845	G	SW				1
	Chelsea Creek	10-11-17	0845	G	SW				1
	Chelsea Creek	10-11-17	0845	G	SW	3			
	Chelsea Creek	10-11-17	0845	G	SW		2		
	Chelsea Creek	* Fill at Lab!		G	SW	*			
	Chelsea Creek	10-11-17	0845	G	SW				1
	Chelsea Creek	10-11-17	0845	G	SW				1

List Preservative Code below:

3	11	2	11	10	4		

Analysis

Ammonia	TRC, salinity, pH, TS, TSS	BTEX & naphthalene	PAHs	TOC	Total Recov. (Cd, Cu, Pb, Ni, Zn)*	LC50		Check if chlorinated
X								☐
	X							☐
		X						☐
			X					☐
				X				☐
					X			☐
						X		☐
								☐
								☐
								☐

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards

Report metals down to the MDL
Required Minimum Levels:
BTEX - 2 µg/L
naphthalene - 5 µg/L
Group 1 PAHs - 0.1 µg/L
Group 2 PAHs - 5 µg/L
Cd, Pb, Ni - 0.2 ug/L
Cu - 0.5 µg/L
Zn - 5 µg/L

Relinquished by:	Received by:	Date:	Time:
[signature]	[signature]	10-11-17	12:26
[signature]	[signature]	10/11/17	1030 1545

Temp °C
Observed: 4.2
Correction Factor: 0
Corrected: 4.2
IR ID #: 02

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☑ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

* Note: AECOM Authorizes Eurofins to fill 2 Vials for TOC analysis. (H_3PO_4)
Total of 11 bottles should be analyzed!

SC40225 By ✓

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analysis: Ammonia	TRC, salinity, pH, TS, TSS	BTEX & naphthalene	PAHs	TOC	Total Recov. (Cd, Cu, Pb, Ni, Zn)*	LC50	Check if chlorinated
SC40225-01	Chelsea Creek	10-11-17	0845	G	SW				1	X							☐
	Chelsea Creek	10-11-17	0845	G	SW				1		X						☐
	Chelsea Creek	10-11-17	0845	G	SW	3						X					☐
	Chelsea Creek	10-11-17	0845	G	SW		2						X				☐
	Chelsea Creek	* Fill at Lab!		G	SW	*								X			☐
	Chelsea Creek	10-11-17	0845	G	SW				1						X		☐
	Chelsea Creek	10-11-17	0845	G	SW				1							X	☐
												X					☐
02	Trip Blank	10-11-17															☐

List Preservative Code below:
3 | 11 | 2 | 11 | 10 | 4

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards

* Report metals down to the MDL

Required Minimum Levels:
- BTEX - 2 µg/L
- naphthalene - 5 µg/L
- Group 1 PAHs - 0.1 µg/L
- Group 2 PAHs - 5 µg/L
- Cd, Pb, Ni - 0.2 ug/L
- Cu - 0.5 µg/L
- Zn - 5 µg/L

TB added per client. DM 10/12

Relinquished by:	Received by:	Date:	Time:
		10-11-17	12:26
		10/11/17	1030
			1545

Temp °C: Observed 4.2 | Correction Factor 0 | Corrected 4.2 | IR ID # 02

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: ☑ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen
Custody Seals: ☐ Present ☐ Intact ☐ Broken

* Note: AECOM Authorizes Eurofins to fill 2 Vials for TOC analysis. (H_3PO_4)
Total of 11 bottles should be analyzed!

SC 40230

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analysis: Ammonia	TSS	O&G	BTEX, naphtha-lene, TBA	Vinyl chloride, MTBE + Ethanol	PAHs and total phenol*	Fecal Coliform	TOC	Check if chlorinated
SC 40230-01	Outfall 003	10-11	0900	G	SW				1	X								☐
	Outfall 003	10-11	0900	G	SW				1		X							☐
	Outfall 003	10-11	0900	G	SW		1					X						☐
	Outfall 003	10-11	0900	G	SW	3							X	X				☐
	Outfall 003	10-11	0900	G	SW		2								X			☐
	Outfall 003	10-11	0900	G	SW				1							X		☐
	Outfall 003	10-11	0900	G	SW	2											X	☐
																		☐
																		☐
																		☐

List Preservative Code below:
3 | 11 | 3 | 2 | 2 | 11 | 11 | 10

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other _____
State-specific reporting standards:

- * Report phenol down to MDL
- Required Minimum Levels:
- BTEX - 2 µg/L; TBA - 10 µg/L;
- naphthalene and vinyl chl - 5 µg/L
- ethanol - 400 µg/L
- Group 1 PAHs - 0.1 µg/L
- Group 2 PAHs - 5 µg/L

Relinquished by:	Received by:	Date:	Time:
		10-11-17	12:24 1030
		10/11/17	1545

Temp °C
Observed 4.2
Correction Factor 0
Corrected 4.2
IR ID # 02

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com, and jennifer.atkins@aecom.com

Condition upon receipt Custody Seals: ☐ Present ☐ Intact ☐ Broken
☑ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC40230 8my ✓

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analysis: TRC, salinity, pH, TS	Total Recov. (Cd, Cr, Cu, Pb, Ni, Zn)*	LC50 **	Check if chlorinated
SC40230-01	Outfall 003	10-11	0900	G	SW				1	X			☐
	Outfall 003	10-11	0900	G	SW				1		X		☐
	Outfall 003	10-11	0900	G	SW				1			X	☐
													☐
													☐
													☐
													☐
													☐
													☐
													☐

List Preservative Code below: 11 | 11

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other _____
State-specific reporting standards

- * Report metals down to MDL
- **LC50 sub to GZA
- Required Minimum Levels:
- Cd, Pb, Ni - 0.2 ug/L
- Cu - 0.5 µg/L
- Cr - 1 µg/L
- Zn - 5 µg/L

Relinquished by:	Received by:	Date:	Time:
[signature]	[signature]	10-11-17	1030 (12:26)
[signature]	[signature]	10/11/17	1545

Temp °C: Observed 4.2; Correction Factor 0; Corrected 4.2; IR ID # 02

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com, and jennifer.atkins@aecom.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☑ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC 40230 ✓

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analysis: Ammonia	TSS	O&G	BTEX, naphtha-lene, TBA	Vinyl chloride, MTBE + Ethanol	PAHs and total phenol*	Fecal Coliform	TOC	Check if chlorinated
						3	11	3	2	2	11	11	10					
SC 40230-01	Outfall 003	10-11	0900	G	SW				1	X								☐
	Outfall 003	10-11	0900	G	SW				1		X							☐
	Outfall 003	10-11	0900	G	SW		1					X						☐
	Outfall 003	10-11	0900	G	SW	3							X	X				☐
	Outfall 003	10-11	0900	G	SW		2								X			☐
	Outfall 003	10-11	0900	G	SW				1							X		☐
	Outfall 003	10-11	0900	G	SW	2											X	☐
																		☐
02	Trip Blank	10-11				2							X	X				☐
																		☐

List Preservative Code below:

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other _____
State-specific reporting standards:

* Report phenol down to MDL
Required Minimum Levels:
BTEX - 2 µg/L; TBA - 10 µg/L;
naphthalene and vinyl chl - 5 µg/L
ethanol - 400 µg/L
Group 1 PAHs - 0.1 µg/L
Group 2 PAHs - 5 µg/L
TB added per client. DM 10/12

Relinquished by:	Received by:	Date:	Time:
		10-11-17	12:24
		10/11/17	1030
			1545

Temp °C: Observed 4.2; Correction Factor 0; Corrected 4.2; IR ID # 02

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com, and jennifer.atkins@aecom.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☑ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Batch Summary

'[none]'

Subcontracted analyses

SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717324

General Chemistry Parameters

1717324-DUP1
1717324-SRM1
1717324-SRM2
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717339

Volatile Organic Compounds

1717339-BLK1
1717339-BS1
1717339-BSD1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717498

General Chemistry Parameters

1717498-BLK1
1717498-BS1
1717498-DUP1
1717498-MS1
1717498-MSD1
1717498-SRM1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717566

Semivolatile Organic Compounds by GCMS

1717566-BLK1
1717566-BLK2
1717566-BS1
1717566-BS2
1717566-BSD1
1717566-BSD2
SC40225-01 (Chelsea Creek)

1717578

General Chemistry Parameters

1717578-BLK1
1717578-BS1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717579

General Chemistry Parameters

1717579-BLK1
1717579-BS1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717670

General Chemistry Parameters

1717670-DUP1
1717670-SRM1
1717670-SRM2
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717748

General Chemistry Parameters

1717748-BLK1
1717748-BS1
1717748-CCB1
1717748-CCB2
1717748-CCB3
1717748-CCV1
1717748-CCV2
1717748-CCV3
1717748-SRM1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

1717901

Semivolatile Organic Compounds by GCMS

1717901-BLK1
1717901-BLK2
1717901-BS1
1717901-BS2
1717901-BSD1
1717901-BSD2
SC40230-01RE1 (Outfall 003)

405439A

Subcontracted Analyses

BZ19754-BLK
BZ19754-DUP
BZ19754-LCS
BZ19754-MS
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

405870A

Subcontracted Analyses

BZ19769-BLK
BZ19769-LCS
BZ19769-LCSD
SC40230-01 (Outfall 003)

B188766

Metals Analyses (Total)

B188766-BLK1
B188766-BS1
B188766-BSD1
SC40225-01 (Chelsea Creek)
SC40230-01 (Outfall 003)

S705799

General Chemistry Parameters

S705799-CAL1
S705799-CAL2
S705799-CAL3
S705799-CAL4
S705799-CAL5
S705799-CAL6
S705799-CAL7
S705799-CAL8
S705799-ICB1
S705799-ICV1

S708328

Semivolatile Organic Compounds by GCMS

S708328-CAL1
S708328-CAL2
S708328-CAL3
S708328-CAL4
S708328-CAL5
S708328-CAL6
S708328-CAL7
S708328-CAL8
S708328-CAL9
S708328-ICV1
S708328-LCV1
S708328-LCV2
S708328-TUN1

S708779

Volatile Organic Compounds

S708779-CAL1
S708779-CAL2
S708779-CAL3
S708779-CAL4
S708779-CAL5
S708779-CAL6
S708779-CAL7
S708779-CAL8
S708779-CAL9
S708779-CALA
S708779-CALB
S708779-ICV1
S708779-LCV1
S708779-LCV2
S708779-TUN1

S708921

Semivolatile Organic Compounds by GCMS

S708921-CAL1
S708921-CAL2
S708921-CAL3
S708921-CAL4
S708921-CAL5
S708921-CAL6
S708921-CAL7
S708921-CAL8
S708921-CAL9
S708921-CALA
S708921-ICV1
S708921-LCV1
S708921-LCV2
S708921-LCV3
S708921-TUN1

S709010

Volatile Organic Compounds

S709010-CCV1
S709010-TUN1

S709250

Semivolatile Organic Compounds by GCMS

S709250-CCV1
S709250-TUN1

S709253

Semivolatile Organic Compounds by GCMS

S709253-CCV1
S709253-TUN1

S709296

Semivolatile Organic Compounds by GCMS

S709296-CCV1
S709296-TUN1

S709340

Semivolatile Organic Compounds by GCMS

S709340-CCV1
S709340-TUN1

S709409

Semivolatile Organic Compounds by GCMS

S709409-CCV1
S709409-TUN1

S709413

Semivolatile Organic Compounds by GCMS

S709413-CCV1
S709413-TUN1